

United States Court of Appeals for the Federal Circuit

SOLVAY S.A.,
Plaintiff-Appellant,

v.

HONEYWELL INTERNATIONAL, INC.,
Defendant-Appellee.

2009-1161

Appeals from the United States District Court for the District of Delaware in case no. 06-CV-557, Judge Sue L. Robinson.

Decided: October 13, 2010

ARTHUR I. NEUSTADT, Oblon, Spivak, McClelland, Maier & Neustadt, P.C., of Alexandria, Virginia, argued for plaintiff-appellant. With him on the brief were JEAN-PAUL LAVALLEYE, BARRY J. HERMAN and JEFFREY B. MCINTYRE. Of counsel was MICHAEL E. MCCABE, JR.

ROBERT G. KRUPKA, Kirkland & Ellis LLP, of Los Angeles, California, argued for defendant-cross appellant. With him on the brief were LAURA M. BURSON, GUY RUTTENBERG; and GREGORY F. CORBETT, of Washington, DC. Of counsel were SEAN M. MCELDFOWNEY, of Washing-

ton, DC; and SHANI A. MOORE WEATHERBY, of Los Angeles, California.

Before DYK, MAYER, and SCHALL, *Circuit Judges*.

SCHALL, *Circuit Judge*.

This is a patent case. It arises out of a suit by Solvay S.A. (“Solvay”) against Honeywell Specialty Materials LLC and Honeywell International, Inc. (collectively, “Honeywell”) in the United States District Court for the District of Delaware for infringement of U.S. Patent No. 6,730,817 (“the '817 patent”) owned by Solvay. Solvay now appeals the final judgment of the district court in favor of Honeywell dismissing Solvay’s suit. The court’s judgment in favor of Honeywell was based on two rulings on summary judgment. First, the court held that although asserted claims 1, 5, 7, 10, and 11 of the '817 patent were infringed, they are invalid under 35 U.S.C. § 102(g)(2) because Honeywell was a prior inventor of the subject matter of the claims who had not abandoned, suppressed, or concealed its invention.¹ *Solvay, S.A. v. Honeywell Specialty Materials LLC*, 591 F. Supp. 2d 729 (D. Del. 2008) (“*Invalidity Ruling*”). Second, the court held that asserted claims 12-18, 21, and 22 of the '817 patent were not infringed by Honeywell. *Solvay, S.A. v. Honeywell Specialty Materials LLC*, 591 F. Supp. 2d 724 (D. Del. 2008) (“*Non-infringement Ruling*”).

For the reasons set forth below, we hold that the district court erred in ruling claims 1, 5, 7, 10, and 11 of the

¹ Section 102(g)(2) states that “[a] person shall be entitled to a patent unless . . . before such person’s invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it.”

'817 patent invalid. We do so because we conclude that Honeywell was not a prior inventor for purposes of § 102(g)(2). We also hold, however, that the district court did not err in its rulings that claims 1, 5, 7, 10, and 11 of the '817 patent were infringed and that claims 12-18, 21, and 22 were not infringed. The judgment of the district court is therefore affirmed-in-part and reversed-in-part. The case is remanded to the district court for further proceedings consistent with this opinion.

BACKGROUND

I.

Solvay's '817 patent has a priority date of October 23, 1995. The '817 patent is directed to methods for making 1,1,1,3,3-pentafluoropropane ("HFC-245fa"). HFC-245fa has been found to be advantageous as a blowing and insulation agent in the preparation of expanded polymeric materials, of the type commonly used in refrigeration and heat storage systems. *See* '817 patent, col.1 ll.12-14. HFC-245fa is one of a group of non-ozone-depleting hydrofluorocarbons that were legislatively mandated to replace ozone-depleting chlorofluorocarbons and hydrochlorofluorocarbons. The '817 patent discloses methods for making HFC-245fa by reacting 1,1,1,3,3-pentachloropropane ("HCC-240fa") with hydrogen fluoride ("HF") in the presence of a hydrofluorination catalyst. Specifically, the patent claims processes for making HFC-245fa that include continuously drawing off gaseous HFC-245fa and hydrogen chloride ("HCl") from the reaction mixture.

Claims 1 and 12 are the patent's two independent claims. Claim 1 reads as follows:

In a process for the preparation of [HFC-245fa] comprising reaction of [HCC-240fa] with [HF] in

the presence of a hydrofluorination catalyst, the improvement which comprises carrying out the reaction at a temperature and under a pressure at which [HFC-245fa] is gaseous and isolating and [sic] [HFC-245fa] from the reaction mixture by drawing off [HFC-245fa] and [HCl] in a gaseous phase as each of said [HFC-245fa] and [HCl] is being formed.

'817 patent, col.5 ll.36-46.

Claim 12 reads as follows:

In a process for the preparation of [HFC-245fa] comprising reaction of [HCC-240fa] with [HF] in the presence of a hydrofluorination catalyst, the improvement which comprises carrying out the reaction in a reactor equipped with a device for drawing off a gas stream at a temperature and under a pressure at which [HFC-245fa] is gaseous and wherein said device is controlled (a) to draw off a gas stream comprising [HFC-245fa] and [HCl] as each of said [HFC-245fa] and [HCl] is being formed thereby isolating said [HFC-245fa] from the reaction mixture (b) to keep in the reactor in the liquid state the unconverted [HCC-240fa], most of the [HF] and most of the products of partial fluorination of [HCC-240fa].

Id. at col.6 ll.15-30.

II.

Honeywell produces HFC-245fa in its plant located in Geismar, Louisiana, by reacting HCC-240fa and HF in the presence of a hydrofluorination catalyst (“the Geismar process”). The Geismar process is a continuous process, where HFC-245fa, HCl, unreacted HF, and other by-products are drawn off from the reactor in gaseous form.

Except for the catalyst that escapes from the reactor and that is returned to the reactor by the reflux in the catalyst stripper, the other components of the process exit the reactor as a gas stream for further processing. Notably, most of the HF (approximately 70%) that enters the reactor subsequently leaves the reactor as part of the gas stream. The gas stream then enters downstream equipment, including an HF recovery unit which recovers unreacted HF. The unreacted HF is later recycled and re-fed, as a gas, to the reactor.

III.

Solvay brought suit against Honeywell in the District of Delaware, alleging that the Geismar process infringed claims 1, 5, 7, 10-18, 21, and 22 of the '817 patent. In due course, Honeywell moved for summary judgment of invalidity of claims 1, 5, 7, 10, and 11 of the '817 patent. Honeywell moved on the ground that, under 35 U.S.C. § 102(g)(2), it was a prior inventor of the claimed invention. For its part, Solvay cross-moved for summary judgment of no invalidity on the ground that Honeywell was not a prior inventor and that, even if it was, Honeywell had abandoned, suppressed, or concealed its invention. For purposes of summary judgment on the validity issue, the parties stipulated to the following facts:

In early 1994, Honeywell (then AlliedSignal, Inc.) entered into a research contract with the Russian Scientific Center for Applied Chemistry ("RSCAC"). Pursuant to the contract, RSCAC engineers performed process development studies for the commercial production of HFC-245fa. *See Invalidity Ruling*, 591 F. Supp. 2d at 732. In July 1994, RSCAC sent a report to Honeywell in the United States documenting that it had carried out the liquid phase synthesis of HFC-245fa from HCC-240fa using a continuous process. *Id.* The report documented

that RSCAC had carried out a reaction of HCC-240fa and HF in the presence of an antimony pentachloride catalyst using temperatures between 80-130 degrees Celsius and pressures between 2-40 bar. *Id.* The report also documented the resulting product yield, and it contained a diagram of the equipment that RSCAC had used to carry out the process. *Id.* It is undisputed that the process the RSCAC engineers performed and reported to Honeywell in July 1994 corresponds to the invention claimed in Solvay's '817 patent, and that RSCAC engineers both conceived the invention and reduced it to practice in Russia.

In early 1995, Honeywell used the information that RSCAC had provided to duplicate RSCAC's experiments, with similar conditions and equipment. *Id.* at 736 (noting that Honeywell does not dispute that it replicated or reproduced the work of the RSCAC engineers, such that Honeywell "derived" the invention from RSCAC). It is undisputed that Honeywell performed this work in the United States prior to Solvay's priority date of October 23, 1995.

Throughout the summer of 1995, Honeywell continued working to develop and perfect its process for the preparation of HFC-245fa. *Id.* at 733. The work included finding optimum operating conditions for the process, as well as designing and enabling downstream purification of the HFC-245fa product. *Id.* Development of a pilot plant to test a commercially viable manufacturing process for HFC-245fa was begun by Honeywell, and the plant was in successful operation by February 1996. In March 1996, Honeywell began drafting a patent application on an improvement process for making HFC-245fa. The application was filed on July 3, 1996, and eventually issued as U.S. Patent No. 5,763,706 ("the '706 patent"). The '706 patent discloses a process for the continuous

preparation of HFC-245fa, using optimal conditions for downstream purification, so that the HFC-245fa recovered by distillation has a high purity (at least about 99.5%). See '706 patent, col.1 l.60-col.2 l.25; col.4 ll.40-42.

On December 9, 2008, the district court granted Honeywell's motion for summary judgment of invalidity of claims 1, 5, 7, 10, and 11 of the '817 patent and denied Solvay's motion for summary judgment of no invalidity. See *Invalidity Ruling*, 591 F. Supp. 2d at 743. The court ruled that Honeywell had previously made the invention of the '817 patent in the United States in August 1995, prior to the '817 patent's priority date, and that the asserted claims thus were invalid based on Honeywell being a prior inventor under 35 U.S.C. § 102(g)(2). *Id.* at 739, 743.

In arriving at its ruling, the court rejected Solvay's contention that Honeywell was not an "inventor" under § 102(g)(2). Solvay had urged that the invention at issue was "conceived" abroad by RSCAC's engineers and that Honeywell's "mere reproduction" of a foreign invention in the United States did not make Honeywell an inventor because an inventor must be involved in the conception of the invention. The district court agreed that Honeywell had to "demonstrate that it 'conceived' the invention at issue," to qualify as an inventor under § 102(g)(2), so that "only ordinary skill in the art would be necessary [thereafter] to reduce the invention to practice." *Id.* at 738. The court did not agree, however, that reproduction of an invention cannot satisfy § 102(g), or that, under § 102(g)(2), conception must first occur in the United States. The court found "no authority" that barred Honeywell from being an "inventor" for purposes of § 102(g)(2) merely because it derived the invention from RSCAC as "the original inventor." In that regard, the court declined "to read the 'originality' requirement of § 102(f) into

§ 102(g),”² reasoning that “[s]ection 102(g) . . . contemplates multiple conceptions, as long as each inventor ‘appreciates’ his invention.” *Id.* at 739.

The district court concluded that “Honeywell conceived the invention at issue in the United States upon receipt of RSCAC’s instructions, because it was at this point that Honeywell possessed a definite and permanent idea of the complete and operative invention, such that it appreciated the fact of its invention.” *Id.* at 738. The court also concluded that “Honeywell has demonstrated conception by clear and convincing evidence as it is undisputed that its receipt of RSCAC’s instructions facilitated Honeywell’s actual reduction to practice of the invention.” *Id.* The court determined, therefore, that Honeywell was the first inventor of the subject matter claimed in the ’817 patent, unless it abandoned, suppressed or concealed its invention. *Id.* at 739, *citing* 35 U.S.C. § 102(g)(2). The court reasoned that, in that regard, the relevant inquiry concerned intentional suppression, based on the period of delay between when Honeywell received RSCAC’s instructions and when it filed its own application that issued as the ’706 patent. *Id.* The court found that “Honeywell was moving towards public disclosure,” that Solvay had failed to show that “Honeywell withheld its invention from the public ‘designedly,’” and that, consequently, Honeywell had not intentionally abandoned, suppressed, or concealed the invention described in the ’706 patent. *Id.* at 742-43.

The parties also cross-moved for summary judgment on the issue of infringement of the ’817 patent. Solvay filed a motion for summary judgment of infringement of

² Section 102(f) states that “[a] person shall be entitled to a patent unless . . . he did not himself invent the subject matter sought to be patented”

claims 1, 5, 7, 10, and 11. Honeywell, in turn, moved for summary judgment of non-infringement of those claims and also for summary judgment of non-infringement of claims 12-18, 21, and 22. On December 9, 2008, the district court ruled on the infringement issue. First, as an alternative to its ruling that claims 1, 5, 7, 10, and 11 were invalid, the court granted Solvay's motion for summary judgment of infringement of those claims and denied Honeywell's cross-motion for summary judgment of non-infringement. Second, the court granted Honeywell's motion for summary judgment of non-infringement of claims 12-18, 21, and 22.

Following its summary judgment decisions, the district court entered judgment in favor of Honeywell and against Solvay, thereby dismissing Solvay's suit. This appeal followed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

I.

We review a district court's grant of summary judgment de novo. *Revolution Eyewear, Inc. v. Aspex Eyewear, Inc.*, 563 F.3d 1358, 1365 (Fed. Cir. 2009). Summary judgment is appropriate where there is no genuine issue of material fact and the moving party is entitled to judgment as a matter of law. Fed. R. Civ. P. 56(c); *AquaTex Indus., Inc. v. Techniche Solutions*, 419 F.3d 1374, 1379 (Fed. Cir. 2005). Thus, summary judgment may be granted when no "reasonable jury could return a verdict for the nonmoving party." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986).

On appeal, Solvay argues that the district court erred in holding that claims 1, 5, 7, 10, and 11 of the '817 patent are invalid under 35 U.S.C. § 102(g)(2) on the ground that

Honeywell was a prior inventor of the claimed subject matter who had not abandoned, suppressed, or concealed its invention. Solvay also argues that the district court erred in granting summary judgment of non-infringement of claims 12-18, 21, and 22. Solvay contends that the district court's non-infringement ruling was based on faulty claim construction. For its part, Honeywell urges us to affirm the judgment of the district court in its favor. It contends that the district court did not err in ruling claims 1, 5, 7, 10, and 11 of the '817 patent invalid and claims 12-18, 21, and 22 not infringed. With regard to claims 1, 5, 7, 10, and 11, Honeywell argues, as an alternative basis for affirming the judgment, that we should reverse the summary judgment of infringement because the ruling was based either on an erroneous claim construction or a misapplication of the correct claim construction. We address these contentions in turn.

II.

A.

Solvay challenges on two grounds the district court's ruling that claims 1, 5, 7, 10, and 11 of the '817 patent are invalid due to prior inventorship. First, Solvay argues that Honeywell could not be "another inventor" under 35 U.S.C. § 102(g)(2) because it is undisputed that it did not invent the claimed process for preparing HFC-245fa but, rather, derived it from RSCAC, whose engineers invented it in Russia. Solvay maintains that the court's conclusion that Honeywell was an inventor of the Russian invention is contrary to 35 U.S.C. § 102(f), which provides that a person shall be entitled to a patent unless "he did not himself invent the subject matter sought to be patented." Honeywell could not be an "inventor" of the Russian invention, Solvay reasons, because it did not itself invent the subject matter of the invention. *See* Appellant's Br. at

17. According to Solvay, the district court erred when it “decline[d] to read the ‘originality’ requirement of § 102(f) into § 102(g).” See *Invalidity Ruling*, 591 F. Supp. 2d at 739. Solvay thus urges us to reject the district court’s determination that “Honeywell . . . demonstrated conception by clear and convincing evidence as it is undisputed that its receipt of RSCAC’s instructions facilitated Honeywell’s actual reduction to practice of the invention.” *Id.* at 738.

Second, Solvay argues that, even if Honeywell does qualify as “another inventor” under § 102(g)(2), the statute does not operate to render claims 1, 5, 7, 10, and 11 invalid because Honeywell suppressed and concealed both the Russian invention and the invention claimed in its own '706 patent. See Appellant’s Br. at 18. In short, Solvay contends that Honeywell failed to carry its burden of establishing by clear and convincing evidence that claims 1, 5, 7, 10, and 11 are invalid. *Young v. Lumenis, Inc.*, 492 F.3d 1336, 1345 (Fed. Cir. 2007); *Apotex USA, Inc. v. Merck & Co.*, 254 F.3d 1031, 1037 (Fed. Cir. 2001) (a party asserting invalidity under § 102(g)(2) must prove facts by clear and convincing evidence establishing a prior invention that was not abandoned, suppressed, or concealed).

Honeywell responds that we should affirm the judgment of invalidity of claims 1, 5, 7, 10, and 11. First, Honeywell argues that it is “another inventor” under 35 U.S.C § 102(g)(2) because it reduced the claimed invention to practice in the United States before the October 1995 priority date of Solvay’s '817 patent. See Appellee’s Br. at 22. Honeywell bases this argument on the following undisputed facts: (1) RSCAC performed in Russia a process that corresponds to the invention of claims 1, 5, 7, 10, and 11 of the '817 patent; (2) in 1994, RSCAC transmitted to Honeywell in the United States complete in-

structions for the process; and (3) in early 1995, Honeywell replicated the Russian process by following the information provided by RSCAC, thereby practicing the invention in the United States before the '817 patent's priority date. *Id.* at 23. Honeywell maintains that, under these uncontested facts, it qualifies as “another inventor” under § 102(g)(2), and that it is clear that Solvay was not the first to make in the United States the subject matter of claims 1, 5, 7, 10, and 11. *Id.* at 24. Citing *Mycogen Plant Sci., Inc. v. Monsanto Co.*, 243 F.3d 1316, 1332 (Fed. Cir. 2001), and *Henkel Corp. v. Procter & Gamble Co.*, 560 F.3d 1286, 1289 (Fed. Cir. 2009), Honeywell urges that a showing that the claimed invention was previously reduced to practice in the United States by someone other than the patentee is sufficient to establish a prior invention defense under § 102(g)(2). *See* Appellee's Br. at 25-26.

Honeywell argues that we should reject Solvay's contention that Honeywell is precluded by § 102(f) from obtaining a patent on the work performed by RSCAC and that therefore it cannot be “another inventor” under § 102(g)(2). *Id.* at 26. According to Honeywell, § 102(f) is not relevant to this case because there is no Honeywell patent at issue here. Again citing *Mycogen*, Honeywell states that the district court properly concluded that the question of whether Honeywell itself is entitled to a patent is not at issue in the case. *Id.* at 27. Relying on *Rexam Indus. Corp. v. Eastman Kodak Co.*, 182 F.3d 1366, 1370-71 (Fed. Cir. 1999), Honeywell urges that, in order for § 102(g)(2) to apply, all that is required is that, in the words of the statute, the “invention was made in this country” before the '817 patent's priority date. *See* Appellee's Br. at 28.

In addition, in *Dow Chemical Co. v. Astro-Valcour, Inc.*, 267 F.3d 1334 (Fed. Cir. 2001), Honeywell argues, we

rejected the contention that “another inventor” under § 102(g)(2) can only be the first original inventor. In Honeywell’s view, *Dow Chemical* stands for the proposition that “someone qualifies as a prior inventor under § 102(g)(2) if the person made the invention in the United States and ‘appreciated the fact of what he made.’” See Appellee’s Br. at 28-29, citing 267 F.3d at 1341. Finally, citing *Checkpoint Sys., Inc. v. ITC*, 54 F.3d 756, 761 (Fed. Cir. 1995), Honeywell states that “[i]t would contradict the purpose of § 102(g) to grant Solvay a patent covering subject matter that Solvay was, as a matter of law, not the first to invent.” See Appellee’s Br. at 31.

Honeywell further argues that, once it established that the claimed invention was made in the United States by “another inventor” before the '817 patent’s priority date, Solvay bore the burden of producing “evidence sufficient to create a genuine issue of material fact as to whether the prior inventor abandoned, suppressed, or concealed the invention.” *Id.* at 31, citing *Dow Chemical*, 267 F.3d at 1339. According to Honeywell, Solvay failed to carry that burden.

B.

A person is not entitled to a patent if “before the applicant’s invention thereof the invention was made in this country by another inventor who had not abandoned, suppressed or concealed it.” 35 U.S.C. § 102(g)(2).³

³ Before enactment of the American Inventors Protection Act of 1999, Pub. L. No. 106-113, 113 Stat. 1501A-552, on November 29, 1999, § 102(g)(2) prohibited an applicant from receiving a patent if, prior to the applicant’s invention, “the invention was made in this country by *another . . .*” 35 U.S.C. § 102(g)(2) (1994) (emphasis added). In *Dow Chemical*, we held that, under both the pre-1999 version of § 102(g)(2) and the current version of the statute, which reads “the invention was made in this

Section 102(g)(2) “relates to prior inventorship by another in this country” and “retains the rules governing the determination of priority of invention.” *Kimberly-Clark Corp. v. Johnson & Johnson*, 745 F.2d 1437, 1444 (Fed. Cir. 1984), quoting P.J. Federico, *Commentary on the New Patent Act*, 35 USCA page 1, at 19 (1954). In other words, when the statute uses the words “the invention was made in this country,” it is referring to the act of inventing in the United States. See *Mycogen*, 243 F.3d at 1331 (“[a]t trial, Monsanto presented evidence that Monsanto scientists Drs. Fischhoff and Perlak were prior inventors, i.e., that they invented the subject matter of the '600 and '862 patents before Mycogen.”); *Apotex*, 254 F.3d at 1036 (“[t]he plain language of § 102(g) clearly requires that the prior invention be made ‘in this country.’”). Therefore, the issue we must decide is whether, under the facts of this case, Honeywell “invented” in the United States the process claimed in the '817 patent, as required by § 102(g)(2). For the following reasons, we hold that it did not.

As just seen, in *Kimberly-Clark*, we stated that § 102(g)(2) “relates to prior inventorship by another in this country” and “retains the rules governing the determination of priority of invention.” 745 F.2d at 1444. Those rules are well known. Section 102(g) states that, in determining priority of invention, “there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the

country by *another inventor* . . .” (emphasis added), it must be shown that an “inventor” made the claimed invention in order to establish a first-inventor defense. 267 F.3d at 1340. In this opinion, we refer to the current version of § 102(g)(2).

other.” 35 U.S.C. § 102(g)(2). Conception is the “formation, in the mind of the inventor, of a definite and permanent idea of a complete and operative invention, as it is hereafter to be applied in practice.” *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1376 (Fed. Cir. 1986), quoting 1 *Robinson on Patents* 532 (1890); *Coleman v. Dines*, 754 F.2d 353, 359 (Fed. Cir. 1985); see also *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1228 (Fed. Cir. 1994) (“Conception is complete only when the idea is so clearly defined in the inventor’s mind that only ordinary skill would be necessary to reduce the invention to practice, without extensive research or experimentation.”). Actual reduction to practice requires that the claimed invention work for its intended purpose, *Hybritech*, 802 F.2d at 1376, while constructive reduction to practice occurs when a patent application on the claimed invention is filed. *Id.*; *Frazer v. Schlegel*, 498 F.3d 1283, 1288 (Fed. Cir. 2007); *Hyatt v. Boone*, 146 F.3d 1348, 1352 (Fed. Cir. 1998).

We have regularly applied “the rules governing the determination of priority of invention” in cases involving the question of prior inventorship under § 102(g)(2). See, e.g., *Mycogen*, 243 F.3d at 1332 (“Monsanto has two ways to prove that it was the prior inventor: (1) it reduced its invention first . . . , or (2) it was the first party to conceive of the invention and then exercised reasonable diligence in reducing that invention to practice.”); *Dow Chemical*, 267 F.3d at 1339-41 (considering conception and reduction to practice in a § 102(g)(2) case). The question thus becomes whether Honeywell conceived of the invention at issue and reduced it to practice in the United States, such that Honeywell is “another inventor” of the process claimed in the '817 patent under § 102(g)(2).

Honeywell is not “another inventor” under § 102(g)(2). That is clear from the facts set forth above, which are

undisputed. As noted, working pursuant to RSCAC's research contract with Honeywell, Russian engineers conceived of the process for making HFC-245fa in Russia. Thereafter, in July 1994, RSCAC sent a report to Honeywell in the United States relating to the developmental work the RSCAC engineers had performed. In the report, RSCAC described the liquid phase synthesis of HFC-245fa from HCC-240fa and the resulting product yield. The report also contained a diagram of the equipment that RSCAC had used to carry out the process. Finally, in the report, RSCAC stated that it had carried out a reaction of HCC-240fa and HF in the presence of an antimony pentachloride catalyst using temperatures between 80-130 degrees Celsius and pressures between 2-40 bar. In the words of the district court, "it is uncontested that the Russian engineers, working under contract with Honeywell manufactured HFC-245fa from HCC-240fa using a continuous process in May 1994 and disclosed that work to Honeywell in a July 1994 report sent to the United States." *See Invalidity Ruling*, 591 F. Supp. 2d at 736.

The district court concluded, however, that Honeywell conceived the invention because, "upon receipt of RSCAC's instructions . . . Honeywell possessed a definite and permanent idea of the complete and operative invention, such that it appreciated the fact of its invention." *Id.* at 738. The district court further concluded that Honeywell had "demonstrated conception by clear and convincing evidence" and "that its receipt of RSCAC's instructions facilitated Honeywell's actual reduction to practice of the invention." *Id.* The court stated that § 102(g) exists to determine which of several conceptions occurred first and thus contemplates multiple conceptions so long as each inventor "appreciates" his invention. *Id.* at 739.

Conception is “the formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice.” *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d at 1228 (quoting *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d at 1376. The test for conception is whether the inventor had an idea that was definite and permanent enough that one skilled in the art could understand the invention. *Burroughs Wellcome*, 40 F.3d at 1228. In this case, Honeywell did not have, or formulate, a definite and permanent “idea” of its own capable of being reduced to practice. Rather, it reproduced the invention previously conceived and reduced to practice by RSCAC in Russia. Such reproduction cannot be conception because, if it were, the result would be that one who simply followed another inventor’s instructions to reproduce that person’s prior conceived invention would, by so doing, also become an “inventor.” Although the district court declined to read the “originality” requirement of 35 U.S.C. § 102(f) into § 102(g), originality is, nevertheless, inherent to the notion of conception.⁴ The definition and test of conception employed in *Burroughs Wellcome*, which speaks to the formation of an idea in the mind of the inventor, necessitates that the conception of an invention be an original idea of the inventor.⁵ Since it is undisputed

⁴ Webster’s Third New International Dictionary defines “conception,” relevantly, as “the *originating* of something (as an idea or plan) in the mind. syn see IDEA.” (emphasis added). WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY 469-470 (3d ed. 1986).

⁵ This does not negate the district court’s observation that § 102(g) is directed to the determination of which invention was first conceived. Inventors, acting independently of each other, can conceive the same invention, and § 102(g) guides the resolution of who receives priority.

that Honeywell did not originate the invention, but reproduced it in the United States by following RSCAC's instructions, Honeywell cannot be said to have conceived of the invention and cannot, consequently, be an inventor for purposes of § 102(g)(2). The district court erred by not applying the requirement that Honeywell be an original inventor of the process disclosed in claims 1, 5, 7, 10, and 11 of the '817 patent.

Honeywell relies on *Mycogen Plant Sci., Corp. v. Monsanto Co.* and *Henkel Corp v. Procter & Gamble Co.* for the proposition that prior inventorship under § 102(g)(2) may be established by showing that the claimed invention was previously reduced to practice in the United States by someone other than the patentee. In *Mycogen*, the issue was whether prior inventorship under § 102(g)(2) was established based on showing an earlier conception and later reduction to practice coupled with reasonable diligence during the "critical period," i.e., the time between the patentee's later conception date but earlier reduction to practice date. 261 F.3d 1361-62. We held that substantial evidence supported patent invalidity under § 102(g)(2), based on "prior inventors" having been diligent during the required time period up to the patentee's reduction to practice date. *Id.* at 1370. There was no contention that the "prior inventors" had not independently, on their own, conceived the invention in the United States. Honeywell, of course, did not independently, on its own, conceive of the invention at issue in this case in the United States. Rather, RSCAC's engineers first conceived the invention in Russia.

Honeywell's reliance on *Henkel* also is misplaced. *Henkel* involved an appeal from a patent interference decision awarding priority of invention to the party that demonstrated an earlier actual reduction to practice based on "an appreciation" that the invention at issue

worked for its intended purpose. 560 F.3d at 1289. *Henkel* did not involve the situation presented here: an accused infringer claiming to be “another inventor” under § 102(g)(2) when it did not conceive the invention at issue.

Similarly unhelpful to Honeywell is its reliance on *Dow Chemical Co. v. Astro-Valcour, Inc.* for the proposition that “someone qualifies as a prior inventor under § 102(g)(2) if the person made the invention in the United States and ‘appreciated the fact of what he made.’” See Appellee’s Br. at 29. In *Dow Chemical, Astro-Valcour, Inc.* reduced to practice a process for producing plastic foam in the United States by following, and then improving upon, the teachings of a U.S. patent. 267 F.3d at 1341 n.5. This court held that Astro-Valcour, Inc. “recognized and appreciated” its new process such that it qualified as a “prior inventor” under § 102(g)(2) even if it was unaware that it had created a legally patentable invention, and was not the first inventor to appreciate the patentability of the invention. 267 F.3d at 1341. Unlike the party seeking the benefit of § 102(g)(2) in *Dow Chemical*, who actually conceived the pertinent invention, Honeywell did not conceive the invention at issue in this case. *Dow Chemical* simply held that, outside the priority context, an individual can have conceived the invention, and be an inventor, even though he did not appreciate what he had invented. The fact that Honeywell later improved upon RSCAC’s instructions to create a new process of making HFC-245fa and claimed that process in its '706 patent is immaterial for the purposes of assessing Honeywell’s prior invention defense under § 102(g)(2). The invention at issue is the invention claimed in Solvay’s '817 patent, not the one claimed in Honeywell’s '706 patent. The critical point is that Honeywell did not conceive the invention of the '817 patent, but derived it from others.

Finally, Honeywell argues that, as a matter of policy, it would contradict the purpose of § 102(g)(2) to allow Solvay to have a patent covering subject matter that Solvay was not the first to invent. The problem with this argument is that it misstates the issue before us. The issue before us is not whether Solvay was the first to invent the subject matter of the '817 patent. Rather, the issue is whether Honeywell established its defense that the invention claimed in the '817 patent was conceived and reduced to practice by it, as “another inventor” in the United States, before Solvay. The uncontested facts make it clear that Honeywell did not establish its § 102(g)(2) defense.

Whether this holding ignores the realities of globalization and outsourcing by modern-day research companies, as Honeywell contended at oral argument, is not the question before us. The question before us is whether, under the undisputed facts, Honeywell qualifies as “another inventor” under 35 U.S.C. § 102(g)(2). Because Honeywell did not itself conceive the RSCAC process of making HFC-245fa, under 35 U.S.C. § 102(g)(2), as this court has construed the statute, it is not “another inventor” of the subject matter claimed in the '817 patent.

In sum, because Honeywell does not qualify as “another inventor” under 35 U.S.C. § 102(g)(2), we hold that the district court erred in ruling claims 1, 5, 7, 10, and 11 of Solvay’s '817 patent invalid by reason of prior inventorship.⁶ We turn now to Honeywell’s argument that the district court erred in its ruling that Honeywell infringed claims 1, 5, 7, 10, and 11 and to Solvay’s challenge to the

⁶ Because Honeywell does not qualify as “another inventor” under § 102(g)(2), it is not necessary for us to reach the question of whether Honeywell abandoned, suppressed, or concealed the invention claimed in the '817 patent.

court's ruling that Honeywell did not infringe claims 12-18, 21, and 22.

III.

“An infringement analysis entails two steps. The first step is determining the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claims to the device accused of infringing.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc) (citations omitted), *aff'd*, 517 U.S. 370 (1996). Claim construction is a question of law, which we review de novo. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1456 (Fed. Cir. 1998) (en banc).

A.

Honeywell contends the district court erred in its alternative ruling granting summary judgment of infringement of claims 1, 5, 7, 10, and 11 of the '817 patent. Honeywell states that “[e]ither the court misapplied its construction of the ‘isolating’ limitation [of independent claim 1], or it misconstrued the ‘isolating’ limitation . . . by not limiting the gas stream containing the ‘isolat[ed] [HFC-]245fa to only residual amounts of reaction mixture components.” Appellee’s Br. at 21. Honeywell argues that, applying the correct claim construction, it is entitled to a judgment of non-infringement of independent claim 1 and dependent claims 5, 7, 10, and 11. Honeywell’s argument involves the construction of both claims 1 and 12 of the patent, for Honeywell asserts that “[h]ad the district court properly applied the construction it gave to ‘isolating . . . [HFC-245fa] from the reaction mixture’ for claim 12, it could only have concluded, as a matter of law, that the accused Honeywell process does not infringe claim 1 or its dependent claims.” *Id.* at 57.

The district court construed the limitation “isolating . . . [HFC-245fa] from the reaction mixture by drawing off [HFC-245fa] and [HCl] in a gaseous phase as each of said [HFC-245fa] and [HCl] is being formed” in independent claim 1 as follows:

The process for making HFC-245fa includes a reaction at a temperature and under a pressure whereby HFC-245fa and HCl are produced in gaseous form and *separated from the reaction mixture in a gas stream that can include other compounds, such as unconverted reactants and chlorofluoropropanes possibly formed by incomplete fluorination of HCC-240fa.*

Solvay, S.A. v. Honeywell Specialty Materials LLC, No. 06-557, 2008 WL 5155629, at *2 (D. Del. Dec. 9, 2008) (“*Claim Construction Ruling*”) (emphasis added).

The corresponding limitation in independent claim 12 of the '817 patent reads “isolating said [HFC-245fa] from the reaction mixture . . . to keep in the reactor in the liquid state the unconverted [HCC-240fa], most of the [HF] and most of the products of partial fluorination of [HFC-245fa].” In construing this limitation, the district court stated:

I conclude that the “isolating” limitation found in claims 1 and 12 should be construed consistently. The fact that claim 12 discloses a device to accomplish the process, while claim 1 only describes the process, does not convince me that the patentee meant to use the same word (“isolate”) to describe different processes.

Claim Construction Ruling, 2008 WL 5155629, at *3. The court construed the “isolating” limitation of claim 12 as follows: “As the HFC-245fa and HCl are produced in

gaseous form, they are separated from the reaction mixture in a gas stream by the device.” *Id.* at *4. Thus, the court construed “isolating” in independent claims 1 and 12 as meaning “separating.”

In arriving at its construction of claim 1, the district court considered whether the term “isolating,” as used in the claim, means that “only” HFC-245fa and HCl are drawn off from the reaction mixture in a gas stream as they are being formed, or whether the gas stream can include other components. The court reasoned that the patent specification uses “isolate,” “separate,” and “to draw off” interchangeably, as did the inventors during prosecution, and that “isolate” thus should not be construed to mean only HFC-245fa and HCl, even if the dictionary definition of “isolate” suggests separation of a “pure chemical substance.” *Id.* at *3. The court also reasoned that because claim 12’s use of “isolate” clearly allows for “residual amounts” of products other than HFC-245fa and HCl to be in the gas stream, the isolating limitation of claim 1 “should be construed consistently.”⁷

In its infringement ruling, the district court held that the Geismar process infringed claim 1 because it draws off a gas stream from the reaction mixture and thereby isolates, or separates, HFC-245fa from the mixture. *See Non-infringement Ruling*, 591 F. Supp. 2d at 727. The court noted that “although the gas stream in the Geismar process includes many compounds other than HFC-245fa and HCl,” the process still infringed because “claim 1 has been construed very broadly” *Id.* at 727-28.

⁷ As seen, claim 12 recites that “*most* of the [HF] and *most* of the products of partial fluorination of [HFC-245fa]” are kept in the reactor in the liquid state (emphases added). '817 patent, col.6 ll.28-30.

Honeywell urges that the district court failed to appreciate that claim 1 requires that the gaseous product leaving the reactor include *only* “residual amounts of other non-reacting compounds,” along with HFC-245fa and HCl. According to Honeywell, that is also what claim 12 requires. In support of its argument, Honeywell points to the expert testimony of Michael Doherty interpreting “isolating” as “purifying” HFC-245fa from all other reaction mixture components so that there are only residual, i.e., not measurable, amounts of other compounds in the gas stream. *See* Appellee’s Br. at 59-60. Honeywell also points to dictionary definitions of “isolation” as “separation of a pure chemical substance from a compound or mixture,” contending “isolating” thus means completely separating HFC-245fa from all other reaction mixture components, including HF. *Id.* at 60-61. Finally, Honeywell asserts that, during prosecution, the inventors limited the “isolating” step to being one that separates HFC-245fa and HCl from all reaction mixture components the first (and only) time they leave the reactor in a gas stream. *Id.* at 62.⁸ Honeywell concludes that the district court’s error—either in claim construction or claim construction application—resulted in an incorrect finding of infringement with respect to Honeywell’s Geismar process because, in that process, more than “residual amounts” of other compounds leave the reactor. Honeywell contends that the Geismar process does not isolate from the reaction mixture the HFC-245fa and HCl as they are being

⁸ Honeywell points to an amendment made during prosecution, in which the inventors added the “isolating” language in claim 1 and overcame prior art by describing their process as isolating HFC-245fa and HCl by drawing off each from the reaction mixture as they are being formed. Honeywell notes that the inventors said nothing about also drawing off reaction mixture components, such as HF. *Id.*

formed, but, rather, draws off a gas stream which is mostly HF and which also contains partially fluorinated compounds. *Id.* at 58.

Solvay responds that the district court erred in neither its claim construction nor its application of that claim construction. Solvay argues that the district court correctly construed claim 1 when it concluded that “isolating” does not mandate that HFC-245fa and HCl are the only materials in the gas stream that are drawn off, or isolated, from the reaction mixture. *See Non-infringement Ruling*, 591 F. Supp. 2d at 727-28. Solvay asserts that the district court correctly understood that the '817 patent teaches a process that separates gaseous HFC-245fa from the reaction mixture in the reactor by continuously drawing off a gaseous stream that includes HFC-245fa and HCl, as well as other components. *See Appellant’s Reply Br.* at 29-30. Solvay contends that the district court properly construed the “isolating” limitation to include this teaching. *See Non-infringement Ruling*, 591 F. Supp. 2d at 728 (noting that the broad construction of claim 1 “reflect[s] the claim language and the intrinsic evidence”). *See Appellant’s Reply Br.* at 30-31. Solvay also contends the district court properly applied the construction of the “isolating” limitation to find infringement, based on Honeywell’s acknowledgement that its Geismar process includes many compounds other than HFC-245fa and HCl in the gas stream that are drawn off from the reaction mixture (e.g., HF and other partially fluorinated compounds). *See id.* at 31; *Non-infringement Ruling* at 727-28.

We see no error in the district court’s infringement ruling. In our view, claim 1 is not limited to “isolating” *only* HFC-245fa and HCl and residual amounts of other compounds. The claim does not recite isolating HFC-245fa from all other components involved in the

process, and it does not recite isolating HFC-245fa from everything beyond residual amounts of reaction mixture components in the gas stream. Neither does the specification require that the gaseous stream separated from the reaction mixture contain *only* HFC-245fa and HCl. The patent specification uses the terms “isolating,” “separating,” and “drawing off” interchangeably, as the district court noted. At the same time, we do not think any of the statements made during prosecution call for a construction of claim 1 that requires only “residual amounts” of other components in the gas stream. In the prosecution amendment to which Honeywell points, *see* footnote 8 above, the inventors simply described their process as isolating HFC-245fa and HCl by drawing off each from the reaction mixture as they are being formed. Such a description does not constitute a statement that the invention of the '817 patent involves a process in which only certain reactants (and no others) can be isolated from reaction mixture components or, in other words, one in which only residual amounts of other compounds are contained in the gas stream.

Honeywell’s reliance on the testimony of Michael Doherty interpreting “isolating” as “purifying” HFC-245fa from all other reaction mixture components is misplaced. The term “purifying” is not used in the patent and is not to be considered synonymous with “isolation” based on extrinsic expert testimony alone. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) (en banc) (extrinsic evidence such as expert testimony is “less significant than the intrinsic record in determining the legally operative meaning of claim language”) (internal citations omitted); *Kara Tech. Inc. v. Stamps.com Inc.*, 582 F.3d 1341, 1348 (Fed. Cir. 2009) (“extrinsic sources like expert testimony cannot overcome more persuasive intrinsic evidence.”); *Ultimax Cement Mfg. Corp. v. CTS*

Cement Mfg. Corp., 587 F.3d 1339, 1347 (Fed. Cir. 2009) (district court erroneously relied on expert testimony and a dictionary definition to the exclusion of the intrinsic evidence of the specification language).

Finally, we do not view the district court's construction and application of claim 1 as inconsistent with its construction of claim 12. As noted, in construing claim 12's "isolating" limitation, the court stated that "[a]s the HFC-245fa and HCl are produced in gaseous form, they are separated from the reaction mixture in a gas stream by the device." *Claim Construction Ruling*, 2008 WL 5155629, at *4. The court's construction of claim 1, in which "isolating" does not mean that the gas stream contains no more than residual amounts of components other than HFC-245fa and HF, is not at odds with its construction of claim 12's isolating limitation, in which "HFC-245fa and HCl are . . . separated from the reaction mixture in a gas stream"

The district court construed a different claim 12 limitation, "to keep in the reactor in the liquid state the unconverted [HCC-240fa], most of the HF and most of the products of partial fluorination of [HCC-240fa]," as follows:

The gas stream can include *residual* amounts of other compounds, such as unconverted reactants and chlorofluoropropanes possibly formed by incomplete fluorination of HCC-240fa. However, the unconverted HCC-240fa, more than 50% of the HF, and more than 50% of the partially fluorinated intermediates must remain in the reactor vessel in the liquid state.

Claim Construction Ruling, 2008 WL 5155629, at *4 (emphasis added). In urging an inconsistency between the court's construction of the "isolating" limitations in

claims 1 and 12, Honeywell points to this claim construction language. It apparently contends that this construction of claim 12's "to keep in the reactor in the liquid state" limitation, combined with the court's statement that claims 1 and 12 are to be construed "consistently," means that "isolating" in claim 1 means that only "residual" amounts of compounds other than HFC-245fa and HCl may be in the gas stream. This language, however, does not relate to the "isolating" limitation of claim 12. Rather, it relates to the "keep in the reactor in the liquid state" limitation of the claim. As the discussion in section B below makes clear, this is a fundamentally different limitation from the "isolating" limitation.

We therefore reject Honeywell's argument with respect to claim 1, whether viewed as asserting an incorrect claim construction or the erroneous application of a correct claim construction. Because Honeywell does not dispute that its accused Geismar process has a gas stream with more than residual amounts of reaction mixture components, the district court did not err in ruling that claims 1, 5, 7, 10, and 11 of the '817 patent were infringed.

B.

Solvay argues that the district court erred in granting summary judgment of non-infringement of claims 12-18, 21, and 22 of the '817 patent, *see Non-infringement Ruling*, 591 F. Supp. 2d at 728. Specifically, Solvay contends the district court erred in its construction of the limitation "to keep in the reactor in the liquid state the unconverted [HCC-240fa], most of the [HF] and most of the products of partial fluorination of [HCC-240fa]" in independent claim 12. Solvay urges that, under the correct construction of the limitation, there is no dispute that the Geismar process infringes claims 12-18, 21, and 22. According to

Solvay, all other limitations of claim 12 and dependent claims 13-18, 21, and 22 are met in the Geismar process.

As noted, the district court construed this limitation as follows:

The gas stream can include residual amounts of other compounds, such as unconverted reactants and chlorofluoropropanes possibly formed by incomplete fluorination of HCC-240fa. However, the unconverted HCC-240fa, more than 50% of the HF, and more than 50% of the partially fluorinated intermediates must remain in the reactor vessel in the liquid state.

Claim Construction Ruling, 2008 WL 5155629, at *4. In so ruling, the court looked to the prosecution history, in which claim 12 was described by the inventors as being “limited” to a process whereby the reaction is carried out in a reactor “equipped with a device for drawing off a gas stream which is controlled . . . to keep in the reactor in the liquid state the unconverted HCC-240fa, most of the HF and most of the products of partial fluorination of HCC-240fa.” *Id.* The court concluded that, on this prosecution record, “claim 12 is a more limited, narrow claim than claim 1 and should be construed accordingly.” *Id.*

Armed with its claim construction, the court ruled that the Geismar process did not infringe claim 12, or dependent claims 13-18, 21, and 22, because the Geismar process does not keep more than 50% of the HF in the reactor vessel in the liquid state, as required by the claim. *See Non-infringement Ruling*, 591 F. Supp. 2d at 728. The court cited the portion of the record referring to Honeywell’s description of its Geismar process, which Solvay did not dispute, characterizing the Geismar gas stream as containing unreacted HF and partially fluorinated intermediates, along with other components. *Id.* at

726. The record also reflects that the gas stream in the Geismar process is fed, *inter alia*, into an HF recovery unit to recover the unreacted HF, which is later re-fed to the reactor as a gas, not a liquid.

In arguing against the district court's claim construction, Solvay breaks up the limitation into two parts; first addressing the "to keep in the reactor" clause and then addressing the "in the liquid state" clause. Solvay contends that the "to keep in the reactor" clause should be read to include unconverted and partially converted reactants that are either "kept in" or "returned to" the reactor for further use in the process, and that it was error for the court to conclude that the reactants must always remain in the reactor vessel. *See* Appellant's Br. at 29-30. Solvay points to language in the specification which teaches that "it is advantageous to separate the [HFC-245fa] and the [HCl] from the reaction mixture as they are being formed and to *keep in, or return to*, the reactor the unconverted reactants. . . ." *See* '817 patent, col.2 ll.64-67 (emphasis added); Appellant's Br. at 28-29.

As for the "in the liquid state" clause, Solvay argues that a correct construction of the limitation overall should include HF that leaves the reactor but then returns (in any state, either liquid or gaseous) and thereby becomes available to react in the liquid phase reaction to produce HFC-245fa, as disclosed in the specification. *See* Appellant's Br. at 28-30. Solvay maintains that the district court's non-infringement ruling should be reversed, because it is based upon an erroneous claim construction and that the Geismar process infringes claim 12 under a correct claim construction that permits reactants to remain in the process by being returned to the reactor.

For its part, Honeywell contends the district court correctly construed the claim 12 limitation based on the

plain language of the claim, the '817 patent specification and the prosecution history. Honeywell contends that its Geismar process does not infringe claim 12 of the '817 patent under that construction, because most of its HF leaves the reactor, and re-enters the reactor as a gas, not a liquid. *See* Appellee's Br. at 15. Honeywell argues that the district court properly relied on the plain language of the claim to construe "keep in" to mean that most of the HF must actually remain in (not leave from and return to) the reactor. *Id.* at 44-45. Honeywell points to the sentence in the '817 patent specification upon which Solvay relies ("to keep in, or return to, the reactor the unconverted reactants") and contends that it discloses two distinct actions—(1) "to keep in" and (2) "or return to"—and that claim 12 covers the former alone. Honeywell also argues that, during prosecution, the inventors limited the claimed invention to keeping unconverted and partially converted reactants in the reactor by distinguishing the invention over prior art, U.S. Patent No. 5,574,192 ("the '192 patent"), which disclosed removing HF as a gas from the reactor, condensing it, and then later recycling (i.e., returning) it back to the reactor. *Id.* at 52-53. Honeywell contends the district court properly recognized that claim 12 is "a more limited, narrow claim than claim 1" because it was described as making "even more apparent" the advantage of the claimed invention over the '192 patent, by limiting the process of claim 12 to require a device that is controlled "to keep in the reactor in the liquid state . . . most of the [HF]." *See Claim Construction Ruling*, 2008 WL 5155629, at *2, *4; Appellee's Br. at 44-45.

Here, again, we agree with the district court's claim construction. In our view, the limitation "to keep in the reactor in the liquid state" means that the reactants must stay in the reactor in the liquid state until they leave as a

gas and cannot return after being re-processed. It is true that the disclosure in the specification is broad enough to include unconverted and partially converted reactants that return to the reactor for further use in the process, because the “or” in the phrase “to keep in, or return to, the reactor the unconverted reactants” suggests an alternative description of the process rather than either/or, in the disjunctive sense. However, the prosecution history should also be considered, and here we think the issue is decided. *See, e.g., Phillips*, 415 F.3d at 1317 (“the prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.”).

During prosecution, the inventors distinguished the prior art '192 patent from their invention on the ground that, in their invention, the reactants are not recycled and returned to the reactor, but rather have the advantage of remaining in the reactor vessel in the liquid state. The statements made during prosecution reflect a distinction between, on the one hand, the claimed invention having reactants remain in the reactor in liquid form and, on the other hand, the prior art having unconverted and partially converted reactants leave and then return to the reactor for re-processing. The claim 12 limitation excludes the step of having reactants return to the reactor. It is undisputed that, under this construction, the term “keep in the reactor in the liquid state” is not met by the Geismar process. *See Non-infringement Ruling*, 591 F. Supp. 2d at 726 (“[t]he record also reflects that the gas stream is fed, *inter alia*, into an HF recovery unit to recover the unreacted HF, which is later re-fed, as a gas, to the reactor”). Thus, we see no error in the district

court's ruling that the Geismar process does not infringe claims 12-18, 21, and 22 of the '817 patent.

CONCLUSION

We reverse the district court's grant of summary judgment that claims 1, 5, 7, 10, and 11 of the '817 patent are invalid under 35 U.S.C. § 102(g)(2). However, we affirm the ruling on summary judgment that Honeywell's Geismar process infringes claims 1, 5, 7, 10, and 11. We also affirm the court's ruling on summary judgment that the Geismar process does not infringe claims 12-18, 21, and 22 of the '817 patent. We remand the case to the district court for further proceedings consistent with this opinion.

COSTS

Each party shall bear its own costs.

**AFFIRMED-IN-PART, REVERSED-IN-PART, and
REMANDED.**